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Agricultural Memorandum No. XV

Persistence of 1 foot earth temperatures

Temperatures at 0900h. at 1 foot depth under grass were observed at Hesketh Park, Southport from 1891 to 1954.

The monthly averages are as follows:-

Jan.	37.5	Apr.	46.9	July	64.2	Oct.	50.1
Feb.	37.7	May	54.6	Aug.	62.9	Nov.	43.1
Mar.	40.8	June	61.3	Sept.	57.7	Dec.	39.3°F.

The month-by-month deviations from these long-term averages can then be analysed as follows:-

Deviations above Average

Percentage of Positive Deviations

Month	(a) all months	(b) when previous month had a positive deviation		
		Any Value	1°F. or more	2°F. or more
January	47.5	62.5	66	60.5
February	59	71.5	79	100
March	52.5	65.5	77	73.5
April	52.5	67.5	75	81.5
May	52.5	68.5	90	93.5
June	59.5	74.5	82.5	89
July	50	72.5	82	89
August	47	61	65	60
September	53	73.5	89.5	90
October	56	65	66.5	57
November	56	64	63	71.5
December	48.5	53	60	78

The tendency for warm earth temperatures to persist has thus been strongest in February, April, May, June, July and September; it has been weakest in October and December.

Deviations below Average

Percentage of Negative Deviations

Month	(a) all months	(b) when previous month had a negative deviation		
		Any Value	1°F. or more	2°F. or more
January	52.5	66	63.5	69
February	41	53	66.5	55
March	47.5	66	69	72
April	47.5	64	71.5	71.5
May	47.5	65.5	53.5	50
June	40.5	57.5	60.5	55.5
July	50	83	80	83.5
August	53	67	85	100
September	47	64.5	85	100
October	44	53.5	61	71.5
November	44	53.5	58	50
December	51.5	57	61	77

Here there is least evidence of persistence in May and November; the evidence is strongest in summer.

The position in spring is especially interesting, a cold March in the soil seems to tend to persist into April, but after a cold April there is only about an even chance of cold earth temperatures in May.

The extent to which a positive deviation has appeared in a month following a positive deviation, and similarly for persistence of negative deviations is shown by the following tables:-

Distribution of Earth Temperatures when previous month was <u>above</u> average.
(percentages)

Month	plus 3°F. or more	plus 2°F. or more	plus 1°F. or more	Above Average	Below Average	minus 1°F. or more	minus 2°F. or more	minus 3°F. or more
January	10	20	43	63	37	17	10	0
February	10	30	53	72	28	23	13	12
March	8	33	49	65	35	21	13	8
April	9	36	43	67	33	12	0	0
May	9	21	36	69	31	10	6	3
June	9	24	36	75	25	9	3	0
July	16	26	50	72	28	11	5	1
August	9	30	45	61	39	6	0	0
September	3	20	33	73	27	10	10	0
October	9	15	38	65	35	24	9	6
November	6	14	33	64	36	25	17	11
December	17	25	44	53	47	33	11	6

Distribution of Earth Temperatures when previous month was <u>below</u> average.
(percentages)

Month	plus 3°F. or more	plus 2°F. or more	plus 1°F. or more	Above Average	Below Average	minus 1°F. or more	minus 2°F. or more	minus 3°F. or more
January	9	9	24	34	66	27	21	18
February	12	18	29	47	53	41	35	25
March	0	13	21	34	66	49	34	19
April	7	10	18	36	64	33	23	10
May	0	7	23	34	66	51	23	7
June	3	3	7	43	57	46	26	13
July	0	0	4	17	83	62	31	10
August	0	2	14	33	67	47	22	13
September	0	3	15	35	65	44	12	3
October	7	7	20	47	53	37	23	13
November	11	14	29	46	54	32	25	7
December	4	21	36	43	57	36	32	18

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